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Unusual habitat for Threadfin (Teleostei: Polynemidae) in the South-western Atlantic Ocean

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Abstract: We describe an uncommon record of Threadfin on rocky reef. The aim is to fill gaps in ecological knowledge of habitat use and provides baseline information on the feeding ecology of Threadfin. Details on the record, habitat and behavior of the observed individuals are described and discussed.

Keywords: rocky reef, *Polydactilus* spp., feeding ecology, Brazil

Resumo. Habitat incomum para o Parati-gato (Teleostei: Polynemidae) no Oceano Atlântico Sul Ocidental. Descrevemos o registro incomum de Parati-gato no recife rochoso. O objetivo é preencher lacunas do conhecimento ecológico do uso do habitat e fornecer informação base da ecologia alimentar do Parati-gato. Detalhes do registro, habitat e comportamento dos indivíduos observados são descritos e discutidos.

Palavras-Chaves: recife rochoso, *Polydactilus* spp, ecologia alimentar, Brasil.

Fishes have complex life histories and habitat use may vary widely among life history stages. Additionally, the life histories of many species are poorly known (Kendall *et al*. 1984; Able 2005). The family Polynemid are distributed in all tropical and subtropical aquatic ecosystems and is characterized by pectoral filaments, used to look for prey under the bottom. Polynemids, often inhabit marine and brackish, but some species are found in rivers. There are 42 valid species, typically found at sand and mud flats, where feed on benthic invertebrates (Eschmeyer & Fong 2017; Froese & Pauly 2017). Three species that have similar body appearance occur in the western Atlantic Ocean and are registered in the Brazilian coast: *Polydactylus octonemus* (Girard 1858), *P. oligodon* (Günther 1860) and *P. virginicus* (Linnaeus 1758). For these, *P. oligodon* and *P. virginicus* are the most common species occurring on the Brazilian coast and *P. octonemus* was registered only in the North coast (Menezes & Figueiredo 1985; Carvalho-Filho 1999; Carpenter 2002; Motomura 2004).

On January 2007, scientific surveys led to visual records a school of *Polydactylus* spp. (≅20 individuals), observed at a rocky reef site in shallow waters (≅5 m), on the sheltered side of the island (Fig. 2). The record was made in the Tamboretes Archipelago (26º22'49.94"S, 48º31'30.43"W), a marine protected area (Acaraí State Park) at north coast off Santa Catarina State (Fig. 1). The archipelago islands' sharing similar characteristics with other islands of southeastern and south Brazil, such as rocky shores, outcrops and rocky reefs covered by turf, macroalgae and bentonic organisms (Ferreira *et al*. 2001; Bumbeer *et al*. 2016). These ecosystems are highly diverse, rich in natural resources and of great ecological importance (Moura *et al*. 1999; Anderson *et al*. 2015; Pinheiro *et al*.

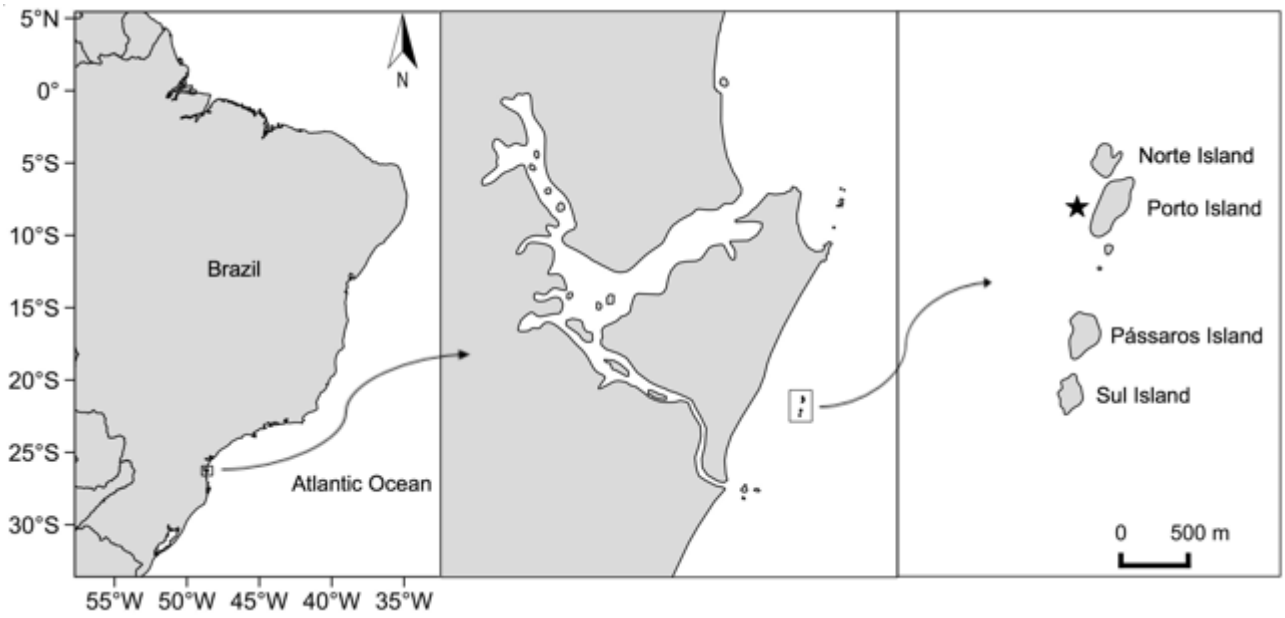

Figure 1. The shoal of *Polydactylus* spp. was observed at a rocky reef of the Porto Island (black star), Tamboretes Archipelago, Acaraí State Park, southern Brazil. Credits: Johnatas Adelir-Alves.

Figure 2. Threadfin (*Polydactylus* spp.) using rocky reefs showing feeding behavior at Porto Island, Tamboretes Archipelago. Note the red circle indicate the pectoral filaments used by fish to find prey in the turf algae. Photo: Johnatas Adelir-Alves.

2018). The fishes are identified, at the gender level, according to Froese & Pauly (2017). *Polydactylus oligodon* and *P. virginicus* are very similar to each other, making it difficult the distinction during underwater surveys, being possible only by morphological characters (e.g. pored lateral-line scales) (Motomura 2004).

Although shallow reefs along the Brazilian coast are well studied in relation to their species composition (Floeter *et al*. 2001), there are few registers of Threadfin. Rocha *et al.* (1998) did not describe the exactly site of *P. virginicus* record and Anderson *et al.* (2015) cited that the records of *P. oligodon* and *P. virginicus* were made near the reef, in sandy bottom and in the interface (rocky/sandy). Some estuarine, coastal and pelagic fishes usually use reef environments, mostly as sheltering, feeding and reproduction (Sale 1991). Fishes associated, directly or indirectly, with reefs exhibited a variety of spatial and temporal patterns of habitat use. The faunal composition associate to the rocky reef and monthly influences (e.g. environmental conditions) appear to play an important role in rocky reef fish assemblages (Ferreira *et al.* 2015).

The unusual behavior by *Polydactylus* spp on rocky reef seems to be related with exploration new habitats to increased foraging efficiency with a probably reduced predation risk since we did not observe predators near the Threadfin school or escape behavior, which seemed to be looking for food (Fig. 2). We cannot disregard the mob-feeding behaviour, a common association observed in tropical reef habitats in large shoals, a feeding tactic employed to overcome the territorial defenses of other fish (Morais *et al*. 2017). Anyway, the most likely explanation it is this behavior may simply reflect the spatial concentration of turf algae on shallow rocky reefs, which is plausible considering the great availability of food. Turf algae serving as a food resource for many organisms because there are many components, such as algae, microorganisms, invertebrates, detritus and sediment (Choat 1991; Ferreira & Gonçalves 2006; Francini-Filho *et al.* 2010), which could explain the fish invertebrate feeders occasional association with the rocky reef, like *Polydactylus* spp.

This study demonstrates that rocky reef can serves as feed habitat for some species, such as Threadfin fishes from the genus *Polydactylus*, that are some of habitat specialized fishes on sand and mud flats. Basic information of fish biology has been helping to fill knowledge gaps of some species ecological particularities (Francini-Filho *et al*. 2012; Bueno *et al*. 2015; Osório & Godinho 2017). Finally, the importance of this reef ecosystem as feeding ground for fish, reinforces the need for studies of Brazilian reef fish ecology and for the conservation of this poorly protected ecosystem in Brazil.

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